

## Notes on the Genus *Libellago* Selys, with Descriptions of two new species (Odon.).

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(With one text-figure).

In the present paper adherence is given to the proposal of Dr. Fraser in uniting all hitherto known species of the asiatic genus *Micromerus* Rambur under the name *Libellago* Selys, a closely allied genus which was generally understood to comprise only those rather numerous species occurring in the aethiopian region. Though very similar in outward appearance and life-history, the two genera are easily distinguished systematically, but, except in a few cases, the names *Micromerus* and *Libellago* were shifted at the outset.

A clear explanation of the existing state of things was already given in 1916, by the late Dr. Fr. Ris, in a systematic paper on oriental *Calopterygidae* (Entom. Mitteil., 5, 9—12, Nov. 1916), but for convenience' sake the situation remained unaltered, and the name *Micromerus* was still retained for the species of the asiatic genus.

Recently, Fraser has proposed the name *Chlorocypha* n. n. as a substitute for *Libellago* auct. nec Selys, with *caligata* (Selys) from Port Natal as species typica, and *Libellago* Selys 1840 instead of *Micromerus* Rambur 1842 et auct., with *lineata* (Burm. 1839) as genotype (cf. Fraser, J. Bombay Nat. Hist. Soc., 32, 1928, pp. 683—684).

This course has also been followed here.

As regards the known representatives of *Libellago* nob., I have made up the following alphabetical list, giving also a short note on their distribution, so far as our present knowledge goes.

Species marked with an asterisk I have not seen myself.

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|--|-------------|
| * <i>Libellago andamanensis</i> Fraser | Andaman Is. |
| * „ <i>asclepiades</i> Ris             | Celebes.    |

* <i>Libellago asiatica</i> Selys <sup>1)</sup>	Philippines.
„ <i>aurantiaca</i> Selys	Siam, Malaya, Borneo.
„ <i>bisignata</i> Mc Lachlan	Celebes.
* „ <i>finalis</i> Selys	Ceylon.
* „ <i>greeni</i> Laidlaw	Ceylon.
„ <i>hyalina</i> Selys	Malaya, Sumatra, Borneo.
„ <i>lineata</i> Burm., and its races	
* <i>blandus</i> Selys, <i>indica</i>	
Fraser, and <i>lineata</i>	
Burm.	India, Ceylon, Nicobar Is., Andaman Is., Burma, Siam, Malaya, Penang, Sumatra, Java, Borneo, Formosa.
„ <i>mima</i> sp. n.	Borneo.
„ <i>naïas</i> sp. n.	Flores, Soemba.
„ <i>phaeton</i> Laidlaw	Borneo.
„ <i>rufescens</i> Selys	Celebes.
„ <i>semiopaca</i> Selys	Malaya, Sumatra, Borneo.
„ <i>snellemani</i> Selys	Sumatra.
„ <i>stictica</i> Selys	Borneo.
„ <i>stigmatizans</i> Selys	Malaya.
„ <i>sumatrana</i> Selys	Sumatra, Simaloer, Nias, Sipora, West-Java.
„ <i>xanthocyana</i> Selys	Celebes, Moluccas.

*Libellago mima* sp. n. (fig. 1).

Material studied: — 1 ♂ ad., labelled 63 (white label, SELYS' hand-writing), *mimus* Borneo (yellow label, SELYS' hand), *Micr. mimus*, S. ♂ Borneo (white square label, SELYS' hand), undescribed in Mus. Brussels.

Closely allied to *semiopaca* SELYS, but with pterostigma present in both pairs of wings.

Male (adult). — Labium shining black, the mentum yellowish. Mandibles and maxillae black, tipped with reddish brown. Genae black. Labrum black, with slight violet reflex. Clypeus in front metallic violet, the flattened horizontal portion brilliant metallic blue, and the remainder of clypeus jet-black. Eyes

<sup>1)</sup> Location doubtful. Originally described as *Libellago* (*Chlorocypha* nob.) *asiatica* Selys, from the Philippines. Afterwards the same author described from Burma the „race“ *vittata*, which is said to come very near typical *asiatica* Selys.

chestnut-brown with distinct violet hue. Dorsal surface of head dull black, sparsely decorated with yellow spots, as follows: — two rather indistinct spots on each side in front of the median ocellus, situated between the antennae; two somewhat larger elongate spots, one on each side near the posterior ocelli; finally an equally small postocular spot along occipital margin. Antennae black. Occiput black.

Prothorax (damaged).

Synthorax with colour-design almost exactly identical to *semiopaca* SELYS; dorsum and sides jet-black, as far down as the first lateral suture. Mesepisternum with a pair of narrow, yellowish, antehumeral lines; these lines are widest below and do not reach the wing-base, just before each of which lies an isolated transverse yellow spot. From slightly above the middle of the dark ground-colour covering the mesepimerum projects a narrow black off-shoot into the greenish fascia occupying most of the metepisternum, but not so far as to break it up in two pieces. The lower portion of the pale metepimeral fascia, thus formed, is straight cut off ventrally and the spiracle bears a small black point; the upper portion is rather pointed above, its lower margin being strongly concave and excavated by the dark ground-colour: besides, there is a transverse, elongate greenish spot opposite it, just below the point of attachment of the hind wings. Infraepisterna all black. Metepimerum with a large subtriangular green fascia, broadly margined with black along the lower side of second lateral suture and along latero-ventral margin. Thorax wholly black ventrally, save for a diffuse, rather triangular spot on the middle of poststernum.

Coxae with a few greenish spots posteriorly; legs otherwise entirely black.

Wings generally shaped as in *semiopaca*, though a trace narrower, with apices of anterior pair more evenly rounded and without the slight subapical anterior widening as is found in that species. Neuration similar but apices less densely reticulate, with intercalated sectors less numerous and shorter. In front wing only three sectors between  $M_1$  and  $M_2$ , two between  $M_2$  and  $M_s$ , and likewise two between  $M_s$  and  $M_3$  (*semiopaca*  $4\frac{1}{2}$ —5, 2, 2 respectively). Hyaline, with bases very faintly yellowish. Tips of front wings dark brown as far inwards as about six cells proximad of pterostigma, continuing right across

the wing, as in *semiopaca*, with inner margin only slightly convex and rather sharply delimited, its length being 5.5 mm. Antenodal cross-nerves 5.6:6.6. Pterostigma present in both pairs of wings, rather small and narrow, black in colour, covering  $2\frac{1}{2}$  to 3 underlying cells.

Abdomen identical in shape and with pale markings strikingly similar to *semiopaca*. Ground-colour black, with well-defined, paired spots on the dorsum of segm. 1—7, as is shown



Fig. 1. *Libellago mimas*  
n. sp. ♂ Borneo.  
Colour-pattern of abdomen, dorsal view.

in fig. 1. These spots are clear green in colour, those on segm. 1 and 6 being rather more yellowish. The dorso-lateral spots on segm. 1 continue along the sides without touching the tergal margin. On 2 the dorsal marking is bent caudad, and strongly constricted in its middle, running along the sides to almost reaching the posterior margin of the segment. Latero-ventral margin of 3 with a narrow, longitudinal marking shaped as a mark of exclamation, and occupying its entire length; basal half of 4 with a similarly placed, but simple, green stripe, and 5 with vestige of such a line at extreme base only. Tergites of remaining segments and all sternites black.

Anal appendages wholly black, not different in shape from *semiopaca*.

Length: abd. + app. 14, hind wing 18 mm.

Holotype in Mus. Brussels.

Whilst going over the unidentified Odonata in the old collection of the late Baron EDMOND de SELYS LONGCHAMPS, in October 1928, I discovered the single male of this interesting new species in a box containing palaearctic dragonflies.

Mr. ANTOINE BALL kindly permitted me to save it from oblivion, and to describe it once.

### *Libellago naias* sp. n.

Material examined: — 31 ♂, 27 ♀, mostly adult, Wai Radjang, W. Flores, 16.—18. XI. 1929, J. K. de JONG leg.; taken

along small streams. — 2 ♂ ad., Laora, 100 m, N. W. Soemba, IV. 1925, K. W. DAMMERMAN leg.

Holotype male and allotype female: Wai Radjang, W. Flores in Mus. Buitenzorg.

Male (ad., Flores). — Labium and ventral face of mandible-bases greenish yellow, the tips blackish. Labrum and outer face of mandibles pale green, the former with a narrow black stripe along base, projecting a little in front to form a black median point. Clypeus entirely black, save for a minute ochreous spot on each side along margin in front of the anteclypeus; post-clypeus with an elongate lateral spot of green close against fronto-clypeal suture. Genae and frons largely marked with green, as follows: — from the anterior margin of compound eye this colour extends upwards, being at first strongly constricted, leaving the bases of antennae surrounded by black; thence broadly expanding over the horizontal portion of the frons, forming on each side large, rather rounded, grass-green blotches, covering most of the dorsal surface, but not meeting one another in the median line. Close behind each of these blotches lies a much smaller, rather crescent-shaped green spot. First antennal joint clear yellowish green in front, the remainder of antennae black. Dorsal surface of head jet-black, save for a small elongate yellow spot on either side of the two lateral ocelli. Occiput black, with a small, semicircular, clear yellow postocular spot, situated along the margin on each side of the transverse crest, which is also yellow.

Prothorax black, with two large, irregular lateral yellow spots, an anterior yellow line and a posterior, diamond-shaped, median orangish spot.

Synthorax deep black, the mesothoracic ridge and a pair of narrow antehumeral stripes chrome yellow; these stripes widest ventrally, thence gradually tapering, incomplete above, occupying about  $\frac{3}{4}$  to  $\frac{4}{5}$  of the length, widely separated from a small isolated yellow spot in front of the antealar ridge, which is likewise yellow. Humeral stripes reduced to narrow, chrome-yellow lines at upper one sixth to two-thirds of the suture. Thoracic sides black with two very broad yellow bands on either side; the anterior pair covering most of the metepisternum, the dorsal third suddenly narrowed by an archwise projection into it, of the lower black ground-colour; the pos-

terior pair covering almost the entire metepimerum, the latero-ventral margin of which remains broadly black. Ventral surface black with a median triangular yellow spot and a transverse yellow bar on poststernum.

Coxae and trochanters black, spotted with yellow. Femora black, interior three-fourths brightly lined with sulphur-yellow; tibiae also black, slightly widened, their interior faces pure white; tarsi black.

Wings hyaline, with the bases only faintly tinged with yellow to the level of arculus or slightly beyond, especially so in hind wings. Antenodal cross-veins 5—7 in all wings. Pterostigma present in both anterior and posterior wings, a little longer than in *sumatrana*, covering three underlying cells, equal in length in both wings and black in colour. Apical spot of anterior wing greatly reduced, much smaller than in *sumatrana*, extending from distal end of pterostigma to the apex, strongly convex below, usually not reaching beyond the vein  $M_2$ .

Dorsal surface of abdomen deep red, articulations finely black. Segm. 1 yellow with a black basal line; dorsum of 2 red, fading to yellow laterally, with an incomplete longitudinal black streak aside, and with the tergal margin broadly bordered with black. Dorsum of segm. 3—5 with minute, paired, transverse, sub-apical blackish spots, growing smaller from before backwards and absent on remaining segments; same segments with similar, longitudinal dorso-lateral black stripes on either side. Dorsum of segm. 9—10 entirely red, but 9 with a black spot aside, and 10 with the dorsal red spot enclosed within black. Ventral portions of tergites red, this colour on segm. 3 and 4 divided longitudinally into two by an incomplete black stripe. Tergal margin of 9 black, 10 wholly black ventrally.

Anal appendages wholly black, the superiors almost identical in shape to *sumatrana*; inferior appendages slightly thicker than in that species, inner margin of distal half in dorsal view finely serrate.

Male (juv.). — The young males have the tips of all wings hyaline and the pterostigma coloured as in the female. The green markings on the head and the red colouring of the body are well developed in such specimens, though a little paler.

Female (ad., Flores). — Head very similar to the male and differing only in that the pale spots are olivish-yellow, or light bluish-grey instead of green. The yellow lines on both sides of anteclypeus are a little larger, almost confluent below, forming a narrowly constricted U-shaped line; postclypeus with an additional yellow spot upon the middle of the sides.

Colour-design of pro- and synthorax exactly identical to the male, all stripes and spots being dirty ochreous- to greenish yellow in colour.

Legs black, interior sides of femora and tibiae yellowish, pruinose blue.

Wings entirely hyaline with the faintest indication of some yellow at extreme bases. Pterostigma decidedly longer than in the male (1.5 mm circa), yellowish white, their proximal edges darkened, covering more than two underlying cells.

Abdomen short and thick, shaped as for genus. Dorsum of segm. 1—10 black with articulations likewise black, encircling the segments. Segm. 1 with a transverse yellow line along posterior margin and with the sides yellow. Dorsum of 2—8 with a longitudinal yellow stripe, interrupted by the transverse black rings; sides of these segments yellow, with complete rather broad, black side-markings; these narrowly confluent posteriorly with the transverse black rings and slightly arcuate in their middle. Articulations between segm. 7—8 and 9—10 yellowish. Segm. 9 black with three apical yellow spots above and a yellow stripe along its lateral margin; 10 black with only a single yellow point on either side. Sternites of all segments black, those of terminal segments bluish pruinose.

Appendages longer than tenth segment, acutely pointed. Valves shining black, with a minute yellow spot at base.

Length: ♂ abd. + app. 15.5—16, hind wing 18—19; ♀ 14—15, 21 mm.

Male (ad., Soemba). — The two males from Soemba resemble the above described specimens from Flores most closely, and I do not hesitate to place them under the same species. The slight differences may be given as follows.

Anteclypeus wholly unmarked. Yellow stripe along dorsal end of humeral suture reduced to a short, very narrow line. The black ground-colour of thoracic sides sends a finely pointed off-shoot into the yellow fascia covering the metepisternum,

dividing it into two unequal portions. Subapical dorsal and latero-dorsal black spots on abdominal segments entirely wanting. Segm. 9 and 10 wholly red, the last segment with a narrow transverse black stripe along base and posterior margin only.

Basal portion of wings slightly more yellowish, in hind wing extending outward to a level between arculus and nodus. Apical black spot in front wings a little higher, though not originating before proximal side of pterostigma.

Length: abd. + app. 16, hind wing 19 mm.

This brightly coloured species recalls *L. sumatrana* SELYS rather closely, but the males are easily distinguished from each other by the following characters:

*sumatrana*

Clypeus wholly bright orange.

Pale markings in front of head orange in colour.

Pterostigma absent in front wing.

Dorsum of abd.-segm. 10 always black.

*naias*

Clypeus black, with a small greenish basal spot aside.

Pale markings in front of head different in shape, and green in colour.

Pterostigma present in both pairs of wings.

Dorsum of abd.-segm. 10 red.

*L. naias* is the first representative of its genus known to inhabit the Lesser Soenda Islands, a fact of considerable geographical interest. I strongly suspect that it will turn out to be an endemic species, confined to the chain of islands situated east of Java, and probably also occurring in Lombok, Soembawa and Timor.

In Celebes the genus is well represented by four species of peculiar appearance, forming a group of its own within the limits of the genus.

The bright orange-bodied *L. sumatrana* has hitherto been reported from Sumatra, and from the islands to the west of it, viz., Simaloer, Nias and Sipora. In Deli, N. E. Sumatra, it is rather common along small rivers and slowly running waters, and I have also seen a good series from the extreme south of Sumatra, from near the Ranau Lake in Benkoelen.

Quite recently I discovered *sumatrana* along small streams in Bantam, the extreme western residency of Java, where it was found flying side by side with the common Javanese species



*lineata* BURM. (= *signata* KRÜGER), though only in very restricted areas and in limited numbers. These Javanese *sumatrana* do not differ in any respect from Sumatran specimens, and there is much evidence to consider Bantam constituting the eastern limit of its distribution.

***Libellago lineata* (BURM.).**

1898. KRÜGER, Stett. ent. Zeit., 59, pp. 86—88, 136. — ♂ ♀ Penang, ♀ Java (*Micromerus signatus*).  
 1904. WILLIAMSON, Proc. U. S. Nat. Mus., 28, p. 172 (*M. signatus*).  
 1926. FRASER, Treubia, Buitenzorg, 8, 3—4, p. 469 (*M. signatus*).

After a very careful comparison of a long series of young males and females of *lineata* with the ample description of KRÜGER as offered for his *signatus*, I have come to the conclusion that both species are evidently synonymous, and that the name *signatus* should be withdrawn.

KRÜGER'S account applies perfectly to immature males of *lineata* and there remain no difficulties in referring his specimens to the widely distributed genotype *lineata*.

***Libellago stigmatizans* (SELYS).**

1859. SELYS, Add. Synopsis Calopt., pp. 13—14 sep. (pars). — ♂ Malacca, Mt. Ophir (*Micromerus*).  
 1903. LAIDLAW, Fascic. Malayenses, Zool., 1, p. 197 (*Micromerus*).  
 1931. LAIDLAW, J. Fed. Mal. States Mus., 16, 3, p. 183 (*Micromerus*).

Material examined: — 1 ♂ ad., labelled Mt. Ophir (written on round pin-label), *Micr. stigmatizans* S. ♂. Mt. Ophir (in SELYS' hand), in Mus. Brussels (holotype). — 1 ♂ ad., labelled Perak, Kwala Kangsar, B. Jachan vend. 1. IV. 1901 (printed), in Mus. Hamburg.

In October 1928, whilst going over some of the type specimens of de SELYS, as contained in the Brussels Museum, I have also examined the unique male of *L. stigmatizans*, from Mt. Ophir in Malaya, giving effect to my desire in comparing it with a recently acquired male from Perak, now in the collection of the Hamburg Museum. This latter specimen is fully matured and in excellent condition, resembling the type specimen in almost every respect.

The male of *stigmatizans* possesses a pterostigma in all four wings, and is at once separated from its nearest allies belonging so the same group by the shape of the apical dark spot in the front wing. Along anterior margin of the wing this

spot is continued inward for about three to four cells proximad of pterostigma, filling up the costal space, and more markedly, the space between R and  $M_1$ , thence suddenly turns back to the middle of the wing and finally curves outward to reach the wing margin at the termination of Ms. In this and other respects the two specimens are exactly identical.

The pale markings on segm. 2—5 of abdomen were described by SELYS as „jaunâtre“, but are evidently discoloured, for in the second male from Perak these spots are bright orange-red in colour.

A second male, also in the Brussels Museum, with its head and abdominal segments 6—10 wanting, was also placed by SELYS under *stigmatizans*, but undoubtedly belongs to *stictica* SELYS.

No other specimens are known than the two mentioned above.

### *Libellago stictica* (SELYS).

1859. SELYS, Add. Synopsis Calopt., p. 14 sep. — ♂ Borneo (*M. stigmatizans* race *sticticus*).

1869. SELYS, 2. Add. Synopsis Calopt., p. 21 sep. — ♂ Borneo (*M. sticticus*).

1920. LAIDLAW, Proc. Zool. Soc. London, p. 332. — ♂ Tatau, N. Borneo (*M. sticticus*).

1931. LAIDLAW, J. Fed. Mal. States Mus., 16, 3, p. 245. — Borneo (*M. sticticus*).

Material studied: — 1 ♂ ad., labelled: Borneo, (Wallace), in Selys' handwriting (type); 1 ♂ imperfect, labelled: Sarawak, and placed under *stigmatizans*. Both specimens in Mus. Brussels.

This species is represented in the old de Selys' collection by the above mentioned type specimen, collected by Wallace only. As already hinted at, the much damaged example from Sarawak, originally determined as *stigmatizans*, very likely also belongs to this species.

*L. stictica* is closely allied to *stigmatizans* resembling that species in many respects.

The differences as given below are based upon a direct comparison between the type specimens.

#### *stictica*.

A distinct orange spot on each side at middle of post-clypeus.

#### *stigmatizans*.

No lateral spot on post-clypeus.

Pale spots present on abd.-segm. 1 bis 9, growing smaller from before backwards; those on segm. 1—3 greenish yellow, on 4—9 red in colour.

Abdominal segments 1 bis 5 with pale spots larger; remainder of abdomen wholly black.

In other respects the differences are small.

*L. stictica* appears to be confined to Borneo. The female is unknown.



Vom 18.—23. Juli findet in **Paris** der **V. Int. Kongress für Ent.** statt. Der Beitrag beträgt für Mitglieder<sup>1)</sup> 125 franz. Frs. Als Preise für Unterkunft werden 25—40 Frs. pro Bett (für Studentenzimmer 10 Frs.), als Preise für Restaurants pro Mahlzeit 7—20 Frs. angegeben. General-Sekretär ist Dr. R. Jeannel, Paris V, 45<sup>bis</sup>, Rue de Buffon. Die Sitzungen finden im Institut National Agronomique, 19, Rue Claude Bernard, Paris V, statt.

Das vorläufige Programm des Kongresses sieht vor: 18. Juli, 10 Uhr: Feierliche Eröffnung, 14 Uhr: Sektions-Sitzungen, 20 Uhr: soirée théâtrale. 19. Juli, 10 Uhr: Generalsitzung, 14 Uhr: Sektions-Sitzungen, 17 Uhr: Besuch des National-Museums im Jardin des Plantes, 20 Uhr: Empfang im Rathaus. — 20. Juli, 9 Uhr: Exkursion nach Fontainebleau. — 21. Juli, 10 Uhr: General-Sitzung, 14 Uhr: Sektions-Sitzungen, 20 Uhr: Festessen. — 22. Juli, 10 Uhr: Sektions-Sitzungen, 14 Uhr: Exkursion nach Versailles und Chevreuse. 23. Juli, 10 Uhr: Sektions-Sitzungen, 15 Uhr: Schlußsitzung. — Nach dem Kongress findet eine gemeinsame mehrtägige Exkursion nach den Pyrenäen statt. —

2 Tage vor Eröffnung des Kongresses (am Nachmittag des 16. Juli) findet die Zentenarfeier der Franz. Ent. Gesellschaft statt, zu welcher Delegationen erbeten sind. Im Anschluß daran ist um 20 Uhr ein Festessen. Am Vormittag des 17. Juli wird das Grabmal von Latreille, I. Ehrenpräsident der Franz. Ent. Gesellschaft, besichtigt. — Gleichzeitig mit dem V. Int. Kongress für Ent. tagt in Form einer Sektion für Bienenkunde der IX. Internationale Kongress für Bienenkunde und der Apis Klub.

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<sup>1)</sup> Für Gäste 65 Frs.